

### Remarks

The final Office action mailed May 2, 2006, and the Advisory Action mailed August 22, 2006, have been reviewed and carefully considered. Claims 1, 7, 19-22, 25, and 29 have been amended for further clarification. Support for these amendments is found in the specification, for example, at page 11, lines 16-22. New claims 33-35 have been added. Support for new claims 33-35 is found in the specification, for example, at page 1, line 28 – page 2, line 17. Claims 17-18 and 32 have been canceled without prejudice for filing a divisional application. Entry of these amendments is respectfully requested.

In the Advisory Action the examiner states that “[t]he concept of excluding the phenol/formaldehyde/urea resin is not disclosed or even alluded to.” Presumably, this statement reacts to the amendment of claim 7 and new claims 33-35 that specify that the claimed composition does not include “a phenol-formaldehyde resin or a urea-formaldehyde resin.” When viewed in context of the whole application, the amended claim 7 and new claims 33-35 composition’s lack of a phenol-formaldehyde resin or a urea-formaldehyde resin one is readily apparent.

The specification discusses on page 1, line 28 – page 2, line 17, the problems associated with the current use of phenol-formaldehyde and urea-formaldehyde wood adhesives. In particular, the Background section of the specification states:

“[B]oth adhesives release volatile organic compounds (VOC) during their manufacture and during their use. Released VOC include chemicals that are thought to be hazardous to human health, such as formaldehyde, which is a suspected carcinogen. Increasing concern about the effect of emissive VOC, particularly formaldehyde, on human health has prompted the development of more benign adhesives. The emission of VOC, including formaldehyde, from wood composites has been studied extensively. See, for example, Baumann et al., “Aldehyde Emission from Particleboard and Medium Density Fiberboard Products,” *For. Prod. J.* 50:75-82, 2000; Henderson, J.T., “Volatile Emissions from the Curing of Phenolic Resins,” *Tappi J.*, 62:9396, 1979; Lambuth, A.L., “Adhesives from Renewable Resources: Historical Perspective and Wood Industry Needs,” *Adhesives from Renewable Resources*; Hemingway, R.W. Conner, A.H. Branham, S.J., Eds.; American Chemical Society: Washington, DC, pp 5, 6, 1989.”

The quoted passage emphasizes that formaldehyde is released from phenol-formaldehyde and urea-formaldehyde wood adhesives. The Background section of the specification concludes by stating that “the wood composites industry would benefit greatly from the development of formaldehyde-free adhesives produced from renewable resources.” Thus, the Background clearly sets the stage for an inventive adhesive composition that is substantially free of formaldehyde and teaches that phenol-formaldehyde and urea-formaldehyde wood adhesives are not substantially formaldehyde-free.

The lack of a phenol-formaldehyde or urea-formaldehyde resin in the compositions of claims 7 and 33-35 is further emphasized by the specification at page 11, lines 14-22. For instance, page 11, lines 14-16 report that “[t]he novel adhesive compositions disclosed herein provide adhesive properties comparable or superior to commercial phenol-formaldehyde resins, *but do not require using formaldehyde*” (emphasis added). This sentence compares and contrasts the claimed adhesive with the conventional compositions that include formaldehyde-containing resins. A person of ordinary skill in the art reading the specification would clearly understand that such comparison and contrast means that phenol-formaldehyde or urea-formaldehyde resins are excluded from the compositions of claims 7 and 33-35.

Moreover, a conclusion that the specification does not support a claim to a composition that excludes a phenol-formaldehyde and urea-formaldehyde wood adhesives would be directly contrary to the specification’s explanation of the meaning of the claim phrase “substantially formaldehyde-free” (this phrase appeared in originally filed claim 4). As explained on page 2, lines 1-13, of the specification, phenol-formaldehyde and urea-formaldehyde wood adhesives both release formaldehyde during their manufacture and their use in wood composites. As explained on page 11, lines 16-22, of the specification, substantially formaldehyde-free compositions do not include formaldehyde or “any compounds that may degenerate to form formaldehyde.” If the claimed composition could include a phenol-formaldehyde or urea-formaldehyde wood adhesive as asserted in the Advisory Action, then the composition would not be “substantially formaldehyde-free.”

### *Restriction Requirement*

The Office action states that none of the withdrawn claims are drawn “to a process of using that adhesive.” However, claims 13-16, and 31 are, in fact, drawn to methods for making a lignocellulosic composite that include using “an adhesive composition according to claim 1” (claim 13) or “an adhesive composition according to claim 29” (claim 31). Thus, applicant is unable to understand how claims 13-16 and 31 are not drawn to a process of using the adhesive that includes all the limitations of the base claim.

### *35 U.S.C. §102 Rejection*

Claims 1, 3 and 6 stand rejected under 35 U.S.C. §102(b) over Sarjeant. The Office action states that column 4, lines 72-75 and column 2, lines 51-53 of Sarjeant are “indicative that there will be no free-formaldehyde in the adhesive composition since it is either removed or further reacted.” Applicants first point that the claims state that the composition is “substantially formaldehyde-free,” not that there is no free formaldehyde in the composition. The significance of this distinction is now emphasized by specifying in claims 1, 19-22, 25, and 29 that the composition “is substantially free of any compounds that degenerate to form formaldehyde” (emphasis added).

As pointed out in the Amendment and Reply mailed on February 15, 2006, the phenolic resin included in the Sarjeant composition is a hybrid phenol/urea/formaldehyde resin regardless of whether any excess free formaldehyde has been “removed” since it is made by reacting phenol with paraformaldehyde (see column 2, lines 51-53) and then with urea. Such hybrid phenol/urea/formaldehyde resins generate and release formaldehyde during curing, and over time from the finished product (see page 1, line 28 – page 2, line 13, of the present application). Contrary to the compositions recited in claims 1, 19-22, 25, and 29, the phenol/urea/formaldehyde resin of Sarjeant degenerates to form formaldehyde.

The examiner in the Advisory Action states that “[t]he claims recite “substantially formaldehyde-free” which embraces the concept of Sargeant, regardless of resin employed.” Contrary to this assertion, a “substantially formaldehyde-free” composition cannot be made from a phenol/urea/formaldehyde resin since it is made from formaldehyde, and as such, will

degenerate and emit formaldehyde over time. Emission of formaldehyde is the problem avoided by the presently claimed composition and is the antithesis of “substantially formaldehyde-free.”

Furthermore, the Sarjeant composition also includes hexamethylene tetramine. As recognized by Sarjeant at column 4, lines 72-75, hexamethylene tetramine also decomposes to release formaldehyde, and thus also would be excluded from the compositions recited claims 1, 19-22, 25 and 29.

If the examiner persists in this rejection, applicants respectfully request the examiner to provide evidence explaining how a resin made from formaldehyde such as that disclosed in Sarjeant will not degenerate to form formaldehyde when employed to make a wood composite.

In summary, the Sarjeant composition includes at least two components that degenerate to form formaldehyde. Thus, the pending 35 U.S.C. §102(b) rejection over Sarjeant must be reconsidered and withdrawn.

As a separate ground supporting patentability, applicants note that claim 7 and claims 33-35 recite an adhesive composition that does not include a phenol-formaldehyde resin or a urea-formaldehyde resin. The Sarjeant composition includes such resins, and thus cannot anticipate or render obvious claim 7 and claims 33-35.

### *35 U.S.C. §103 Rejection*

Claims 1-12 and 19-28 have been rejected under 35 U.S.C. §103 over Sarjeant combined with Brode, III et al. or Blount. As discussed above in connection with the 35 U.S.C. §102 rejection, Sarjeant discloses a composition that includes at least two components that degenerate to form formaldehyde. The disclosures in neither Brode, III et al. nor Blount compensate for this fatal flaw in Sarjeant. Brode, III et al. and Blount are relied upon for allegedly suggesting substituting a decayed lignocellulosic material for the lignin preparation in the Sarjeant composition. Neither one of the secondary references suggest any substitute for the formaldehyde-generating components of the Sarjeant composition.

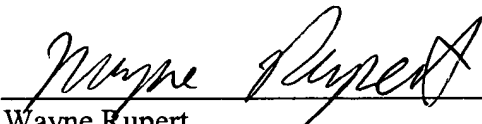
It is respectfully submitted that the application is in condition for allowance. Should there be any questions regarding this application, examiner Nutter is invited to contact the undersigned attorney at the telephone number shown below.

Respectfully submitted,

KLARQUIST SPARKMAN, LLP

One World Trade Center, Suite 1600  
121 S.W. Salmon Street  
Portland, Oregon 97204  
Telephone: (503) 595-5300  
Facsimile: (503) 595-5301

By

  
Wayne Rupert  
Registration No. 34,420